NOTES ON THE GENUS POMERANTZIA BAKER, WITH A DESCRIPTION OF A SECOND SPECIES FROM CALIFORNIA (ACARINA: POMERANTZIIDAE)

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ABSTRACT—Notes are provided on leg chaetotaxy and other diagnostic features of *Pomerantzia charlesi* Baker, the type of the genus. This information, based on paratype specimens, supplements the original description. The larval and nymphal stages of *Pomerantzia prolata* Price are described, and additional notes on the adult female are included. *Pomerantzia* **benhami**, n. sp., from agricultural soils in the San Joaquin Valley, California, is described and illustrated. A key to the 3 known species in the genus and family is provided.

The family Pomerantziidae was established by Baker (1949) to receive an unusual mite, *Pomerantzia charlesi* Baker, from peach orchard soil in Upson County, Georgia. A second species, *P. prolata*, was described by Price (1971) from a ponderosa pine forest soil in Nevada County, California. This paper contributes additional information on *P. charlesi* and *P. prolata*, and describes a third species from agricultural soils in Fresno County, California. A key to known species is provided.

Pomerantziid mites have been collected by the writer from several localities in California. The majority of these, 89 of 122 specimens, have been immature, and as yet no adult males have been found. Immature specimens from grassland soils at Briones and Tilden Regional Parks, Contra Costa County, and from pine forest soil near Alturas, Modoc County, apparently represent undescribed species. Adult specimens are being sought from these localities.

It appears that all members of the Pomerantziidae have a larval and 3 nymphal stages which possess respectively 0, 1, 2 and 3 pairs of genital discs. The adult also has 3 pairs of genital discs, but can be distinguished from the tritonymph by the presence of a seta-bearing, sleevelike ovipositor located internally in the genital region (fig. 2 and 11). All immature stages resemble the adult in having a single propodosomal plate and 5 hysterosomal plates. The dorsal chaetotaxy and the presence of 3 pairs of anal setae remains constant in all stages. The larval stage lacks genital and paragenital setae, as well as the chambered peritremes found in the nymphs and adult. The larva has a pair of urstigmata between coxae I and II (fig. 17).

Three paratype specimens of *P. charlesi* Baker from the U.S. National Museum of Natural History were lent to the writer by Dr. E. W.

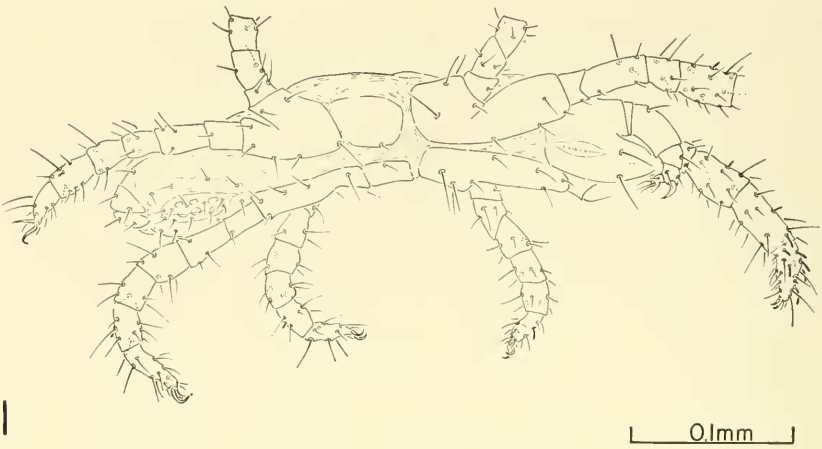

Fig. 1. *Pomerantzia charlesi.* Adult female, ventral aspect.

Baker of the Systematic Entomology Laboratory, USDA. These included 2 adult females and 1 tritonymph. Because the specimens examined, and presumably the holotype also, are in poor condition, a redescription of salient features appeared to be needed. The tritonymph resembles the adult in having 3 pairs of genital suckers and a defined genital region (fig. 7). It bears, however, only 3 pairs of genital setae and 3 pairs of paragenital setae. The adult female bears 5 and 4 pairs of setae respectively (fig. 1), as well as a conspicuous ovipositor.

The chaetotaxy of the legs of *P. charlesi* is not given by Baker (1949) and is presented here as found on the paratype specimens. The following convention is used to designate the chaetotaxy of the leg podomeres. The first number is the total number of tactile setae only; the second number, in parentheses, is the count of all chemosensory setae, that is, all solenidia and sensory pegs ("cone-like spines" of Baker, 1949). If there are no chemosensory setae, the second number is omitted. The numbers of tactile and chemosensory setae on legs I through IV respectively of adult *P. charlesi* are: tarsi, 16(8)-13(2)-11-11; tibiae, 12(3)-5(1)-5(1)-8(1); genua, 12(1)-5-5-5; telofemora, 5-5-4-5; basifemora, 5-4-3-3; trochanters, 1-1-2-1; coxae, 4(1)-4-3-4. Legs I through IV are illustrated in figures 3, 4, 5 and 6.

The tritonymph of *P. charlesi* differs in leg chaetotaxy from the adult female in having only 6 solenidia plus the sensory peg on tarsi I, and in having one fewer tactile seta on genua I, tibiae IV, and coxae IV (fig. 8 and 9). Idiosomal chaetotaxy, except for the genital region, is the same in the tritonymph as in the adult. Although not described by Baker (1949), the chelicerae each bear a short distal seta on the

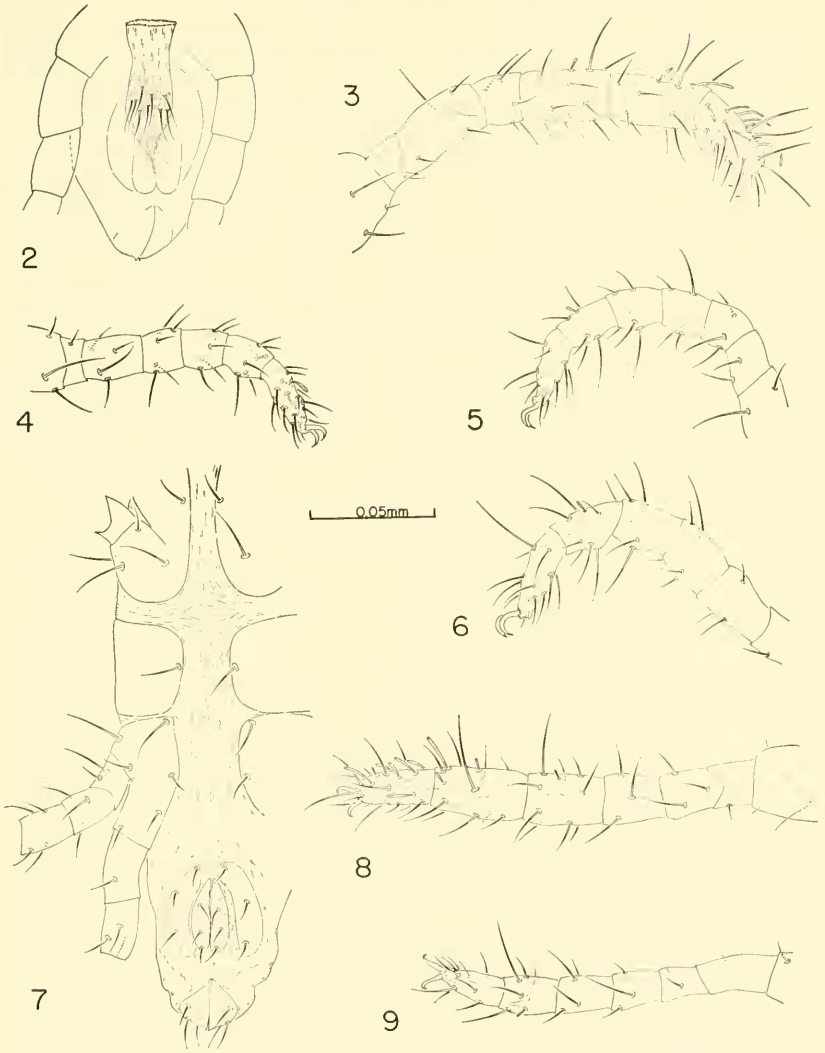

Fig. 2–9. *Pomerantzia charlesi*. 2, ovipositor. 3, leg I, adult. 4, leg II, adult. 5, leg III, adult. 6, leg IV, adult. 7, tritonymph, ventral aspect. 8, leg I, tritonymph. 9, leg II, tritonymph.

dorsal surface. Setae occur in this position in all known members of the family. The 2 adult specimens of *P. charlesi* appear to have 4 or 5 chambers in the peritreme.

A significant difference between *P. charlesi* and *P. prolata* is the presence in the former of a pair of ventral plates immediately anterior

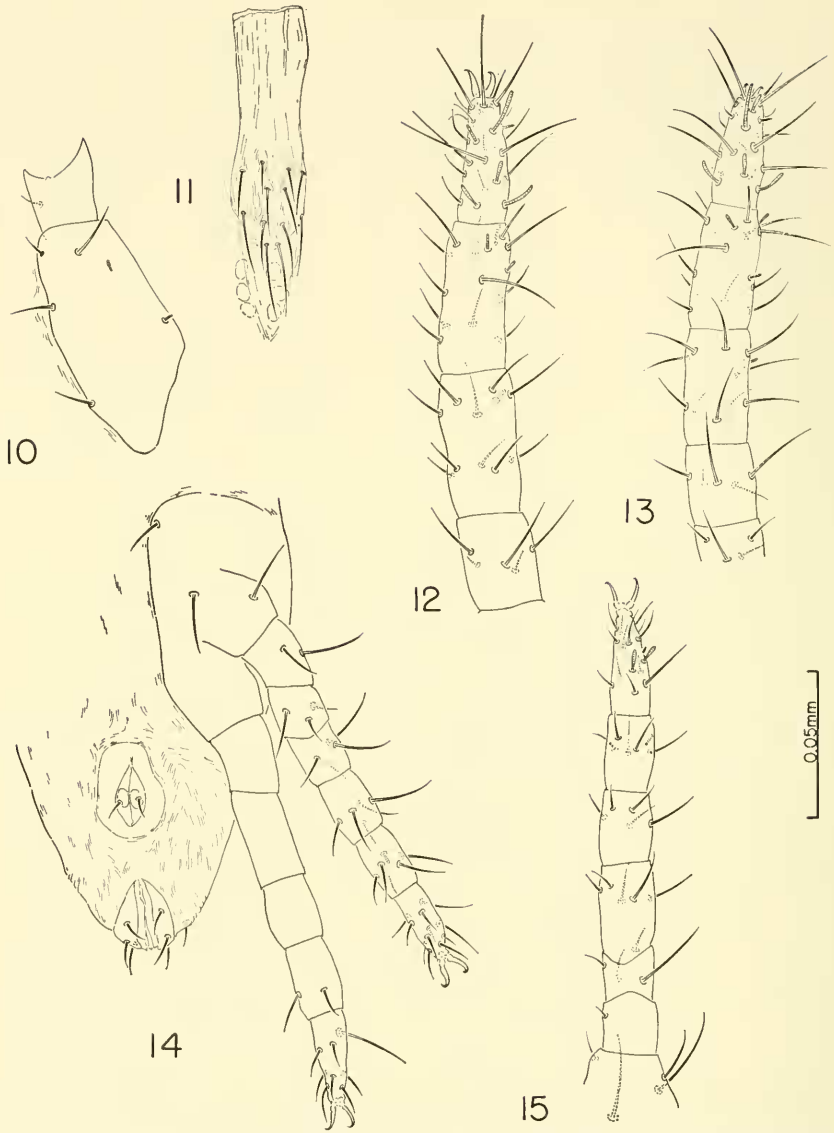

Fig. 10–15. *Pomerantzia prolata*. 10, coxa and trochanter I, ventral. 11, ovipositor. 12, leg I, adult. 13, leg I, tritonymph. 14, legs III–IV and opisthosoma, protonymph. 15, leg II, adult.

to the coxal shields of legs III and IV (fig. 1 and 7). These plates each bear a single seta. Although absent in *P. prolata*, these plates are present in the species described below from Fresno County (fig. 19). A second difference is the presence of a small sensory peg on

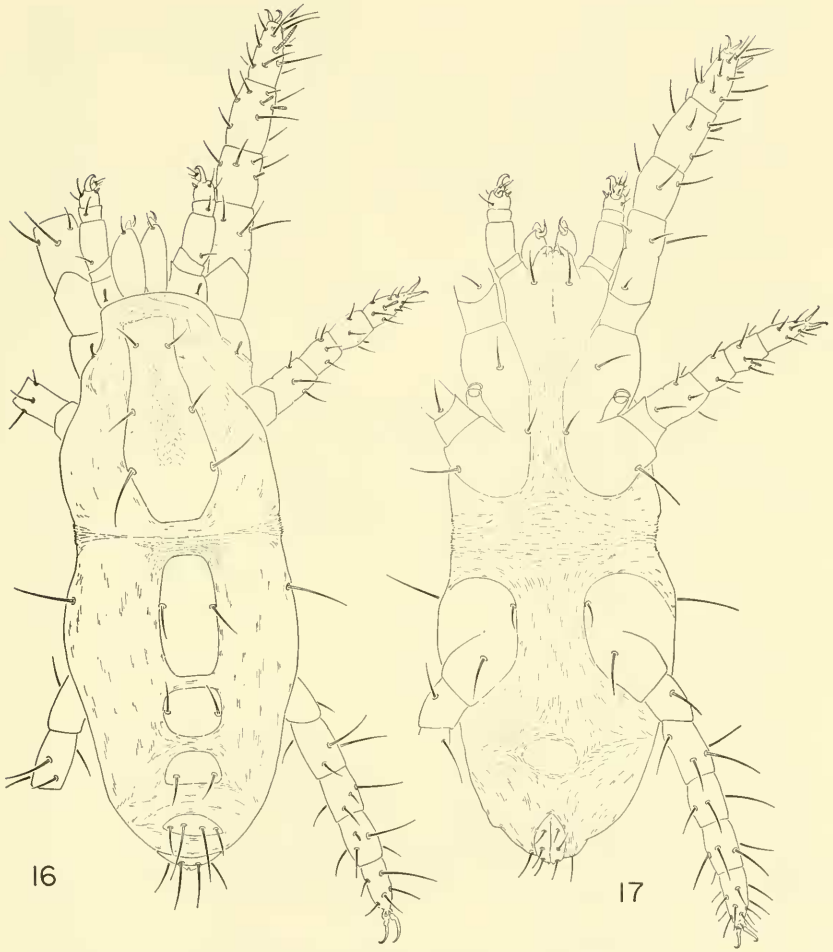

Fig. 16–17. *Pomerantzia prolata.* 16, larva, dorsal aspect. 17, larva, ventral aspect.

the outer, ventral margin of coxae I in *P. prolata* (fig. 10) which is absent both in *P. charlesi* and the species from Fresno County. This sensory peg occurs in addition to the dorsal solenidion of this podomere, and was overlooked in the original description of *P. prolata.*

The larval and 3 nymphal stages of *P. prolata* have been collected from the type locality near Grass Valley, California. The larva (fig. 16 and 17) measures about 269 microns from anus to cheliceral tips. This stage lacks a chambered peritreme. With some variation, the protonymph and deutonymph have 3 chambers in the peritreme; the

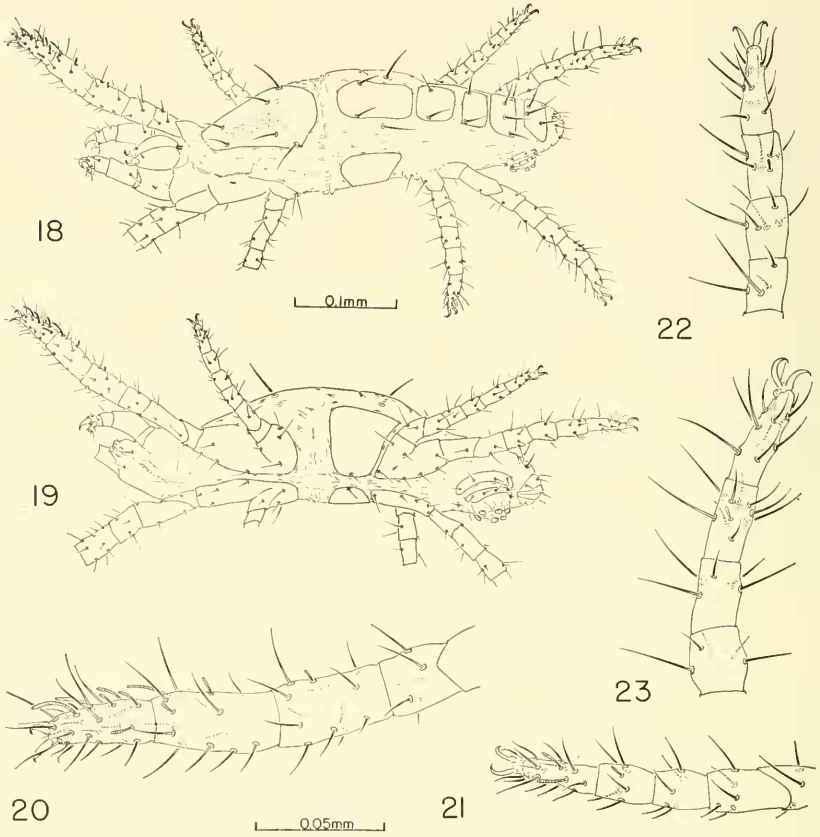

Fig. 18–23. *Pomerantzia benhami.* 18, adult female, dorsal aspect. 19, adult, ventral aspect. 20, leg I, adult. 21, leg II, adult. 22, leg III, adult. 23, leg IV, adult.

tritonymph, 4 or 5 chambers; and the adult, 7 or 8 chambers. The larva has a single pair of ventral setae near the mouth; all other stages have 2 pairs in this region. The protonymph bears 1 pair of genital and no paragenital setae (fig. 14); the deutonymph, 1 pair genital and 2 pair paragenitals; and the tritonymph, 2 pairs genital and 3 pairs paragenital setae. Using the convention described, the numbers of tactile and chemosensory setae on the terminal 3 podomeres of the legs of the immature and adult stages of *P. prolata* are given in Table 1. As shown, the tritonymph and adult have the same number of tactile setae on the legs except for tibia IV which has 2 additional setae in the adult. The distribution of the solenidia on tarsus I of the adult (fig. 12) is different from that on the tritonymph (fig. 13). The

solenidion lying distal to the sensory peg in the tritonymph takes a more proximal position in the adult.

Pomerantzia benhami Price, new species
fig. 18–23

Female: Small, elongate, weakly-sclerotized mite closely resembling *P. charlesi* Baker. Number and arrangement of dorsal plates and dorsal chaetotaxy as in other known members of the family. Propodosomal plate with 3 pairs of marginal setae and a distinct median reticulated area. Hysterosoma with 5 dorsal plates. Dorosolateral hysterosomal setae located posterior to setae on plate I, as in *P. charlesi*. Median setae on hysterosomal plate V distinctly anterior to lateral setae of this plate. With 5 pairs of genital and 4 pairs paragenital setae. Anus terminal, with 3 pairs of setae. With a pair of large ventral plates anterior to coxae III; each with 1 seta near midventral line, as in *P. charlesi*. With 3 or 4 chambers in the peritreme.

Numbers of tactile setae (first figure) and chemosensory setae (figures in parentheses, only if present) on the podomeres of legs I through IV respectively are: tarsi, 19(8)-14(2)-11-11; tibiae, 12(3)-5(1)-5(1)-9(1); genua, 12(1)-5-5-5; telofemora, 5-5-4-5; basifemora, 5-4-3-3; trochanters, 1-1-2-1; coxae, 4(1)-4-3-4. Body measurements in microns of the holotype female are: anus to tip of cheliceral digits, 458; leg I (from coxotrochanteral joint to claw tips), 242; leg II, 156; leg III, 173; leg IV, 211; and tarsus I (to claw tips), 50.

Tritonymph: With 3 pairs genital discs, 3 pairs genital setae and 3 pairs paragenital setae. Leg chaetotaxy as in adult female except for 1 less solenidion on tarsus I, 2 less tactile setae on tibia IV, and 1 less seta on genu I. Body measurements from anus to cheliceral digits ($n = 2$), 440 microns.

Table 1. Numbers of tactile setae (first figure of pair) and chemosensory setae (second figure, in parentheses) on the tarsi, tibiae, and genua of immature and adult stages of *Pomerantzia prolata* Price.

	Leg I			Leg II		
Stage	Tar	Tib	Gen	Tar	Tib	Gen
Larva	16(2)	8(2)	5(1)	12(2)	5(1)	5
Protonymph	17(5)	9(2)	7(1)	13(3)	5(1)	5
Deutonymph	17(5)	10(2)	8(1)	13(3)	5(1)	5
Tritonymph	19(6)	12(3)	10(1)	13(3)	5(1)	5
Adult	19(6)	12(3)	10(1)	13(3)	5(1)	5

	Leg III			Leg IV		
Stage	Tar	Tib	Gen	Tar	Tib	Gen
Larva	11	5(1)	5	–	–	–
Protonymph	11	5(1)	5	8	2	0
Deutonymph	11	5(1)	5	11	7(1)	5
Tritonymph	11	5(1)	5	11	7(1)	6
Adult	11	5(1)	5	11	9(1)	6

The male is unknown.

Pomerantzia benhami is very similar to *P. charlesi*, but is notably larger in size. The body length from anus to tip of chelicerae of the holotype specimen of *P. charlesi* is 340 microns (Baker, 1949). The 2 paratype specimens of this species which I examined were 356 and 350 microns, giving a mean length for the 3 of 349 microns. The holotype of *P. benhami* measures 458 microns. Three additional adult specimens collected 7 miles south of Five Points, Fresno County, averaged 469 microns in total length. Other differences between the 2 species are slight. *Pomerantzia benhami* bears 3 more tactile setae on tarsus I (fig. 3 and 20), 1 more seta on tarsus II fig. 4 and 21), and 1 more seta on tibia IV (fig. 6 and 23) than does *P. charlesi*. The tritonymph of *P. benhami* has 14 tactile setae on tarsus II, whereas *P. charlesi* has 13. The posterior marginal pores on hysterosomal shield III of *P. charlesi* are absent on *P. benhami*. The central reticulations on the propodosomal shield of *P. benhami* (fig. 18) are not evident on the specimens of *P. charlesi* examined.

A key to the adult females of the 3 known species of *Pomerantzia* follows:

1. With a pair of discrete, seta-bearing, ventral plates anterior to coxae III, dorsolateral setae in a line posterior to setae of hysterosomal plate I, tarsus II without a sensory peg, coxae I without a ventral sensory peg, with 5 pairs genital setae 2
— Without ventral plates, dorsolateral setae in a line anterior to setae of hysterosomal plate I, tarsus II with a sensory peg, coxae I with a ventral sensory peg, with 3 pairs genital seta ..... *prolata* Price
2. Length from anus to cheliceral tips about 350 microns, with posterolateral pores on hysterosomal plate III, with 16 tactile setae on tarsus I, 11 on genua I, and 8 on tibia IV ..... *charlesi* Baker
— Length from anus to cheliceral tips about 450 microns, without pores on hysterosomal plate III, with 19 tactile setae on tarsus I, 12 on genua I, and 9 on tibia IV ..... *benhami* n. sp.

The type locality of *P. benhami* is the San Joaquin Valley Agricultural Research and Extension Center, Parlier, Fresno County, California. Two adult females, 2 tritonymphs, 6 deutonymphs, and 4 protonymphs have been collected. In addition, 3 adult females, 1 tritonymph, and 1 larva have been collected from agricultural fields in western Fresno County near Five Points. The species is named for Mr. Gerald S. Benham, Jr. of the Division of Entomology and Parasitology, University of California, Berkeley, for efforts in obtaining specimens of this uncommon mite species.

The holotype female is deposited in the United States National Museum of Natural History.

References

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PRIMARY RECORDS OF TWO VERTEBRATE ECTOPARASITES IN NEW ENGLAND (ACARINA: ARGASIDAE AND DIPTERA: MILICHIIDAE)

On 3 August 1973, 28 big brown bats [*Eptesicus fuscus* (Palisot de Beauvois)] were captured in the attic of a building at a summer camp in Hebron, Connecticut, as part of an arbovirus surveillance program. Four larval *Ornithodoros* (*Alectorobius*) *kelleyi* Cooley and Kohls (Acarina: Argasidae) were observed on one of the bats—two ticks on the back of the neck, one on the front of the neck, and one on an ear. No ticks were found on the remaining 27 bats. Two of the ticks were triturated in 0.75% bovine albumin in phosphate buffered saline at pH 7.2 and inoculated intracerebrally into suckling mice for virus isolation attempts; no virus was detected. Two specimens were retained in the collection of the first author.

The distribution of *O. kelleyi* was summarized by Kohls, Sonenshine, and Clifford (1965, Ann. Entomol. Soc. Amer. 58(3): 331–364). Records for northeastern United States include New York and Pennsylvania (Bequaert, 1946, Entomol. Americana. 25: 73–120) and Maryland (Sonenshine and Anastos, 1960, J. Parasitol. 46(4): 449–454). This report extends the range of *O. kelleyi* into southern New England.

In late June 1970, two male and one female *Carnus hemapterus* Nitzsch (Diptera: Milichiidae) were collected from a nestling osprey [*Pandion haliaetus* (L.)] in South Dartmouth, Massachusetts, by Mr. Gilbert Fernandez. This bird was reported to be heavily infested with the flies as were the two nest mates. Specimens were identified by Dr. Curtis Sabrosky of the USDA Systematic Entomology Laboratory and one male was deposited in the U.S. National Museum. The remaining two specimens were retained in the collection of the first author.

The distribution of *C. hemapterus* was recently reviewed by Capelle and Whitworth (1973, J. Med. Entomol. 10(5): 525–526). They cite only two records from eastern United States—Florida and New York—by Bequaert (1942, Bull. Brooklyn Entomol. Soc. 37: 140–149) and one from eastern Canada—New Brunswick—by Sabrosky (in Stone *et al., A Catalog of the Diptera of North America North of Mexico*, USDA Agr. Res. Serv. 1969 pp). The present records extend the range into southern New England. In addition, this is the first report of *C. hemapterus* from ospreys or osprey nests (see Hicks, 1959, *Checklist* and *Bibliography of the Occurrence of Insects in Birds' Nests*, Iowa State College Press, 681 pp. plus supplements) in spite of the extensive overlap in the ranges of the two species in both the nearctic and palearctic regions.

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